

Today's Topics:

Antennas

A perspective from an outsider.

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Getting serious about building.

Modifying Commerical Radios for use in Ham Bands

Packet compression

pudgy wound helical antenna (60m vertical in my living room!)

Date: 18 Dec 89 22:00:16 GMT

From: cs.utexas.edu!asuvax!hrc!godzilla!dalyb@tut.cis.ohio-state.edu (Brian Daly)

Subject: Antennas

Message-ID: <4781a78b.1423f@godzilla.UUCP>

In article <12549900427007@osu-20.ircc.ohio-state.edu>, BERTSCH-S@osu-20.ircc.ohio-state.edu (Steve Bertsch) writes:

> In a few magazine articles I've seen the terms 'near field' and 'far field',
> but I can't find any mention of these terms in any of the radio or
> electronics texts I've tried. Can anyone define these terms?

Near and Far fields are usually used to indicate the type of fields present around an antenna.

The reactive near field refers to the region immediately surrounding the antenna. This is the region where the reactive components on the antenna predominate. This distance is on the order of a few wavelengths or less.

The radiating near field is that region where the relative angular distribution of the field (i.e. the radiation pattern) is dependent upon the distance from the antenna. This is due to contributions to the field from different elements in the antenna, as well as the amplitude of the fields, changing with distance from the radiating source.

The far field is defined as the region where the antenna radiation patterns are independent of the distance from the antenna. This distance is roughly defined to be $D^2 / (\text{wavelength})$, where D is the width of the equivalent aperture, uniformly excited. When you see an antenna pattern diagram, this pattern is usually defined to be in the far field.

As a good general reference on antenna theory, I'd recommend Antenna Theory: Analysis and Design by Constantine Balanis, or Antenna Handbook by John Kraus. The ARRL Antenna Handbook is another good source.

73's,

Brian K. Daly WB70ML
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Date: 18 Dec 89 22:05:09 GMT
From: excelan!unix!ginger.sri.com!henry@ames.arc.nasa.gov (Henry Pasternack)
Subject: A perspective from an outsider.
Message-ID: <7025@unix.SRI.COM>

M. Batchelor says:

>...- ...- -.-. -.- -.-. --- -.. .

I got my novice license in 1975, at the age of twelve. At the time, I was captivated by the challenge and mystery of amateur radio, which I perceived as a very romantic and adult thing. I enjoyed tremendously the feeling of participating in a secret society, with its rituals and passwords. Code was for me the guardian of amateur radio, screening those with commitment from the unworthy lower class (who ended up on the CB band, the existence of which I most indignantly despised). It seemed to me that Amateur Radio was a Good Thing, not just because of its potential for public service, but because it stimulated the individual to achieve a mastery of radio technology and to strive for excellence in communications.

In years past, I have resisted the various reforms which have made amateur radio more open to the casual participant. I had a great deal of pride in holding an advanced license at the age of fourteen, and did not want to share my hobby with anyone less enthusiastic or skilled. I also had discovered that the real fascination of radio was in the technical challenge. Rambling SSB QSO's with old men in retirement homes were not well-suited to the interests of a young teenager with dreams of becoming a red-hot engineer.

I used to bristle at arguments that the radio waves belonged to the people, and that amateur radio was a kind of elitist club which could not justify the monopoly it held on parts of the spectrum. After all, wasn't the Goodness of amateur radio obvious? Now, I am not so sure. In senior high school, I largely lost interest in the hobby as so many hams began to turn into what appeared to be "appliance operators." In retrospect, I was also getting older, and the thrill of imagining myself a child prodigy was no longer what it had used to be.

I know that there is a large community of dedicated, active, bright people who are still carrying on the tradition of technical excellence and public service through amateur radio. I suppose it is unrealistic to believe my perspective, and that of the rest of the amateur community, would remain the same while more than doubling my age. Still, the hobby doesn't seem the same. I wonder what I will find if I probe further. Is amateur radio still worth my while?

My license expired almost exactly a year ago. Thinking I had better renew, I called the FCC and found out I have another year of grace before I lose my call. On a whim, I went to the ham radio store and looked at all the expensive Japanese boxes, and listened to the chit-chat on 2 meters. I had the most fun playing with a Bencher iambic paddle, which I still find, after fifteen years, to be one of the most beautiful pieces of engineering sculpture I know of.

Fuck code, my ass. What's wrong with you, pal?

-Henry

Date: 18 Dec 89 23:07:41 GMT
From: zaphod.mps.ohio-state.edu!samsung!cs.utexas.edu!ut-emx!oo7@tut.cis.ohio-state.edu (Vance Strickland)
Subject: CT500C
Message-ID: <22487@ut-emx.UUCP>

You don't have to be around very long on HF to hear calls like this. I heard CT500D on a couple of bands recently, and yes, it's Portugal, celebrating 500 years of something or other. The USA used W200 calls for a year for a similar reason, LX150D was a recent Luxembourg station, TU29 stations were all over the place recently for 29 yrs of something in the Ivory Coast, Brazilian stations were signing /PR100, Paraguay had ZP450-something, Nigerians were using 5N29 and so on.

It's probably worth sending them a card through the bureau at least, they tend to have 'special' cards for these occasions. I guess they are pretty useful for those souls who chase prefix awards, and you can probably get a DXCC's-worth of these 'funny' calls in any year.

Pirates usually choose more conventional calls (with some rather notable exceptions) - an intermediate example is the ever-popular RG8U... So if you hear a 'funny' call, you might as well work it and sort it out later.

Happy DXing in 1990 -

Derek Wills (AA5BT, G3NMX)
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oo7@astro.as.utexas.edu

Date: 18 Dec 89 22:28:32 GMT
From: excelan!unix!ginger.sri.com!henry@ames.arc.nasa.gov (Henry Pasternack)
Subject: Getting serious about building.
Message-ID: <7026@unix.SRI.COM>

Please forgive my previous ramblings. Lacking any gear, I thought it might make an interesting challenge to build some of my own. Two projects come to mind:

- 1) A synthesized 2 meter FM transceiver.
- 2) A low-band HF receiver / transmitter pair.

Either project would do. If it's the 2 meter rig, I want a compact base rig with ten watts. If it's the low-band radio, I want to start with a basic double conversion receiver design in modular format so that I can later build it into a full-blown multi-band radio. CW only on transmit is fine for now, with a hundred watts or so of input power. Quality is the key, and money may not be an object.

I have seen a few people ask for help on such projects, but no follow up. I have the means to do this project on my own, but I am interested in contacting people with experience in advanced RF design, so that I don't have to reinvent the wheel.

I anticipate a certain amount of "If you're a beginner, why not go buy a quality used rig and save a lot of money" comments. This is not my intent. I am not a beginner, I know how to build equipment, and I want to get some hands-on experience with RF stuff. I am imagining the satisfaction of building an unpretentious HF CW rig with a hundred dB two-tone dynamic range and a six dB noise floor.

Comments?

-Henry

Date: 18 Dec 89 21:32:11 GMT
From: att!cbnewsh!wa2sff@ucbvax.Berkeley.EDU (joseph.e.wilkes)
Subject: Modifying Commerical Radios for use in Ham Bands

Message-ID: <6704@cbnewsh.ATT.COM>

I recently saw an Ad for a Marine Store that listed Marine Hand Held units for about \$150.

The unit used thumb wheel switches to select the channels.

The unit seemed similiar to Hand helds of a few years ago.

At \$150 (about 1/2 the price of cheap 2 meter Hand held), it might be appropriate to use as a second hand held or for a new ham just starting out.

I could see that maybe it would only transmit simplex and there could be other problems.

Two meter FM got its start by modifying surplus 150 MHz gear to 2 meters.

Two of my many 2 meter rigs over the years were done that way.

Also both the 2 meter and 440 repeaters I put on the air were surplus.

Has anyone tried this with Marine radios or cellular telephones?

Let's get some useful "out of band" modifications going.

Joe Wilkes

att!hound!wa2sff

Date: 19 Dec 89 01:40:56 GMT

From: pacific.mps.ohio-state.edu!zaphod.mps.ohio-state.edu!brutus.cs.uiuc.edu!

ux1.cso.uiuc.edu!ux1.cso.uiuc.edu!phil@tut.cis.ohio-state.edu

Subject: Packet compression

Message-ID: <30500330@ux1.cso.uiuc.edu>

A newsgroup called rec.ham-radio.legal might help a little by occupying the time of arm-chair and on-air lawyers. If not that, at least you can feel good about posting "hey buddy... this belongs in rec.ham-radio.legal".

I happen to think it might be useful. And we can also send all the no-code postings there as well.

--Phil Howard, KA9WGN--

<phil@ux1.cso.uiuc.edu>

Date: 19 Dec 89 00:26:45 GMT

From: ems@apple.com (Mike Smith)

Subject: pudgy wound helical antenna (60m vertical in my living room!)

Message-ID: <5844@internal.Apple.COM>

In article <1260012@hpmw1b.HP.COM> timb@hpmwtd.HP.COM (Tim Bagwell) writes:

>Mike,

>

>I think it's great that you are experimenting with antenna designs. We should
>see more of this kind of worthwhile discussion on the net.

Thanks!

>A couple of comments though...

>2) I can appreciate the space saving aspect of the design, but you get what
> you pay for. I don't think you can do better than a full length antenna.

I'm not trying to do better, just almost as good ... I don't have alot
of roof area and I'm hoping to come up with something small and not too
ugly so my spousal person will let me put it on her house :-) ...

I first became facinated with helicals when I was living in a Mobil Home
and absolutely HAD to have a very small size antenna. I plan to put up
a 31 meter folded dipole on the roof as a real reference antenna and
make a couple of vertical helicals wound on 2" PVC pipe. The 4" PVC
pudgy wound helical was an idea that had first started nagging at me
when I was in the mobil home and only had 48 inches of vertical space.

Unfortunately I didn't have the money then to buy an antenna bridge or
other resonance reporting tool. For helicals you must have some way
to measure resonance. (At least, I have found no published formulae
for calculating it for a helical; they all say 'cut to resonance'
as indicated on {some gadget}.) The published designs all tended
to be wound on 1" to 2" forms and were 15 to 30 feet tall. I kept
wondering what would happen if you made a pudgy helix ... now I know.
(At least, I've started finding out ...)

> To capture the most energy you need as large an effective aperture as you
> can get. However, I have no doubt that you can do better than your window
> antenna (which, I admit, do work remarkably well).

What is 'effective aperture'? Is it just length? Or some product
of length, width, etc?

My window is most annoying. It works far better than it ought. I
don't know if I should curse it for being such a damned puzzlement
or be thankful that I have such an effective free antenna ...

>3) Helical designs are most effective when the diameter is one wavelength or
> more. This makes it radiate in its axial mode which gives it some directive
> gain (not too practical at HF).

Where does one find such info as 'most effective when diameter is one wavelength'? Should I be visiting the Engineering library rather than the Ham Radio store book shelves? I am familiar with the ARRL published design for a UHF helical array with directivity off the end ... but there seems to be rather little published on HF helicals theory.

>I would dearly love to see someone come up with a compact antenna that performs
>as well as the big ones, but I think we're up against one of those doggone
>physical limits here.

One interesting quirk of pudgy wound helixes is that, being so compact, you could make an array out of them. Yup, you loose a little signal on each antenna, but make it up in volume ;-). Now if only I had some way to figure what the directional behaviour was likely to be ...

>Keep up the good work.

Thanks again! I hope that it is 'good work' and not just pointless bumbblings by a 'rank amature' ...

>73's de Tim, WB9MVP
--

E. Michael Smith ems@apple.COM

'Whatever you can do, or dream you can, begin it. Boldness has genius, power and magic in it.' - Goethe

I am not responsible nor is anyone else. Everything is disclaimed.

End of INFO-HAMS Digest V89 Issue #1039
